TEMKINA, Berta Yakovlevna; MEL'NIKOVA, Marina Mikhaylovna; MIKHAYLOV, Nikolay Ivanovich; ZHUKOVA, V.I., red.

[Production and use of electroplates from rare metals and their alloys] Poluchenie i primenenie gal'vanicheskikh pokrytii redkimi metallami i ikh splavami. Leningrad, 1964. 27 p. (MIRA 18:3)

MOLOTOVA, L.V.; IVANOVA, T.G.; TEMKINA, E.A.

Seismic method of prospecting in the crystalline basement of the Volga-Ural region. Geofiz.razved. no.7:3-19 '62. (MIRA 15:7)
(Volga-Ural region—Seismic prospecting)

KARTAVCHENKO, P.K., kand.sel'skokhoz.nauk; MUNTYAN, V.M., spetsred.;
TEMKINA, E.S., vedushchiy red.

[Grape and wine industry in the people's democracies] Vinogradno-vinodel'cheskaia promyshlennost' v stranakh narodnoi demokratii. Moskva, GOSINTI, 1958. 17 p. (MIRA 13:6)
(Viticulture) (Wine and wine making)

BIRKGAN, Yuliy Benediktovich; FOGEL', V.O., spetsred.; TEMKINA, E.S., vedushchiy red.

[High-temperature heat engineering in the oils and fats industry abroad] Vysokotemperaturnoe teplosnabzhenie v zhirovoi promyshlennosti za rubezhom. Moskva, GOSINTI, 1959. 47 p. (MIRA 13:6)

(Oil industries) (Heat engineering)

PR[illegible], [illegible]; [illegible], I.[illegible]

[illegible]-threshold audiometry in the topical diagnosis of cochlear damage. Cesk. otolaryng. 14 no.3:129-131 Je '65.

1. Klinika nemoci usnich, nosnich a krcnich 2. Moskevskeho lekarskeho ustavu N.I. Pirogova.

TEMKINA, I. Ya.

"Extraction of a Foreign Body from the Ear," Fel'dsher i Akusher., No. 9, 1949.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755220011-7"

TEMKINA, I. Ya., Candidate Med Sci (diss) -- "The pathogenesis, clinical aspects, and prophylaxis of complications following punction of the maxillary sinus". Moscow, 1959. 15 pp (Acad Med Sci USSR), 250 copies (KL, No 24, 1959, 152)

TEMKINA, Izabella Yakovlevna; KORCHAGIN, A.V., red.; BASHMAKOV, G.M., tekhn. red.

[Pathogenesis, clinical aspects and prevention of complications in the puncture of maxillary sinus] Patogenez, klinika i profilaktika oslozhnenii pri punktsii gaimorovoi pazukhi. Moskva, Medgiz, 1963. 116 p. (MIRA 16:7)
(MAXILLARY SINUS—PUNCTURE)

TEMKINA, R.Z., kandidat khimicheskikh nauk.

Urea-melamine-formaldehyde resins for gluing veneer. Der. i lesokhim.prom. 2 no.12:20-22 D '53.
(MLRA 6:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli.
(Adhesives)

TEMKINA, R.Z., kandidat khimicheskikh nauk; YACHINA, T.V., inzhener.

Synthetic glue for use in the production of food packaging material. Der.i lesokhim.prom. 3 no.3:18-21 Mr '54. (MLRA 7:3)

1. TsNIIFM. (Adhesives)

TEMKINA, R. Z.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Synthetic Resins and Plastics

Preparation of melamine-formaldehyde adhesive resins. R. Z. Temkina. *Zhur. Priklad. Khim.* 27, 97-104(1954).—The prepn. of melamine-formaldehyde adhesives is discussed in detail. It is shown that the most satisfactory conditions for their prepn. are: melamine/CH_2O ratio 1/3.5, initial pH 6, reaction temp. 80°, duration 50-60 min. With increased duration the amt. of bound CH_2O rises and increases the viscosity of the product. With 40% formalin the mixts. with initial pH 6 show a rise in pH to 7 which does not change even after 1.5 hrs. The use of 40% formalin permits prepn. of resins with 120-200 sec. viscosities.

G. M. Kosolapoff

11-5 54

TEMKINA, R. Z.

KONDRASHKIN, Ye.P., kandidat tekhnicheskikh nauk; TEMKINA, R.Z., kandidat khimicheskikh nauk.

Plywood-stave liquid-proof barrels. Der.prom.4 no.1:10-12 Ja'55.
(MLRA 8:3)

1. TSNIIFM.
(Barrels)

TEMKINA, R.Z., kandidat khimicheskikh nauk.

Urea resins in the manufacture of plywood. Der.prom. 4 no.12:
12-14 D '55.
(MLRA 9:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli.
(Veneers and veneering) (Urea)

TEMKINA, R.Z.; MIKHAILOV, A.N.; IZRAILEVA, I.R.; YACHINA, T.V.

Adhesive carbamide resins with fillers. Der.prom. 5 no.11:9-12 N '56.
(MIRA 10:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli.
(Urea) (Fillers (In paper, paint, etc.)
(Glue)

TEMKINA, R.Z., kand. khim. nauk.

Installation for the production of carbamide resin adhesives. Der. prom. 6 no.10:15-18 O '57. (MIRA 10:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli.
(Urea) (Adhesives)
(Chemical engineering--Equipment and supplies)

TEMKINA, P.Z., starshiy nauchnyy sotrudnik; PLOTNIKOVA, G.P., starshiy nauchnyy sotrudnik; MIRKOVICH, P.A., starshiy nauchnyy sotrudnik; POSPELOVA, G.L., red.; SHENDAREVA, L.V., tekhn. red.; KOLOMOYTSER, V.Z., tekhn. red.

[Fillers for adhesive urea resins and protein-base glues] Napolniteli dlia kleiashchikh karbamidnykh smol i belkovykh kleev. Moskva, TSentr. biuro tekhn. informatsii bumazhnoi i derevoobrabatyvaiushchei promyshl., 1958. 13 p. (MIRA 11:10)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli (for Temkina, Plotnikova, Mirkovich).
(Glue) (Veneers and veneering)

TEMKINA, R.Z., kand.khim.nauk

Increasing the water-resistance and durability of carbamide resins. Der.prom. 7 no.11:7-9 N '58. (MIRA 11:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli.
(Resins, Synthetic)

BANKO, V.P.; DEMIDOVA, L.A.; ILYUSHIN, M.A.; KONDRASHKIN, Ye.P.; kand. tekhn.nauk; MIRKOVICH, M.A.; PLATNIKOVA, G.P.; POROKHIN, A.A., kand. tekhn.nauk; RUMYANTSEVA, O.M.; TEMKINA, R.Z., kand.tekhn.nauk; TIKHONOV, N.F.; SHVARTSMAN, G.M., kand.tekhn.nauk; SHEYDIN, I.A., kand.tekhn.nauk; SMIRNOV, A.V., red.; VOLOKHONSKAYA, L.V., red. izd-va; BACHURINA, A.M., tekhn.red.

[Veneerer's handbook] Spravochnik fanershchika. Vol.2. 1959. 333 p. (MIRA 13:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli. (Veneers and veneering)

TEMKINA, R.Z., kand. khim. nauk

Synthetic glues for rapid gluing of wood. Der. prom. 8 no.5:12-15 My '59. (MIRA 12:7)

1.TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli. (Glue)

TEMKINA, R.Z., kand.khimich. nauk

Producing adhesive phenolformaldehyde resins, containing practically no freephenol, for manufacturing food containers. Trudy TSNIIFM 1:100-115 '60. (MIRA 16:5)

(Gums and resins) (Containers)

TEMKINA, R.Z., kand.khim. nauk; YACHINA, T.V., inzh.

Accelerated wood gluing with the cold method. Der. prom. 10 no. 4:5-7 Ap '61. (MIRA 14:4)

1. Tsentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli. (Woodwork)

TEMKINA, Riva Zakharovna, kand. khim. nauk; KONDRASHKIN, Ye.P., red.; FREGER, D.P., red. izd-va; GVIRTS, V.L., tekhn. red.

[Rapid wood gluing by a cold method using quick-hardening carbamide resins] Uskorennoe skleivanie drevesiny kholodnym sposobom karbamidnymi smolami bystrogo otverzhdeniia; stenogramma lektsii, prochitannoi v LDNTP dlia rabotnikov mebel'noi i derevoobrabatyvaiushchei promyshlennosti. Leningrad, 1962. 19 p. (MIRA 15:9)

(Gluing) (Resins, Synthetic)

TEMKINA, R.Z., kand.tekhn.nauk

Factors influencing the carbide glue permeation in veneering. Der.-prom. 11 no.1:11-14 Ja '62. (MIRA 15:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli. (Veneers and veneering)

TEMKINA, R.Z., kand. khim. nauk

Urea-formaldehyde resins with a minimal content of free formaldehyde. Der. prom. 12 no.8:10-12 Ag '63.
(MIRA 16:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut fanery i mebeli.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755220011-7"

USSR/Medicine - Thyroid Gland
Hormones

Jan 50

155T42

"Reaction of the Thyroid Gland of Guinea Pigs to Thiouracil Under Various Temperatures," A. A. Voytkavich, S. A. Temkina, Kazakh Med Inst imeni V. M. Molotov, Alma-Ata, 3 pp

"Dok Ak Nauk SSSR" Vol LXX, No 1

Experiments conducted to determine whether temperature of media will vary reaction of thyroido-hypophyseal complex of a specie to such a degree as to make them comparable to reaction observed in another specie. Determined that admin-

155T42

USSR/Medicine - Thyroid Gland (Contd)

Jan 50

istration of thiourecil in white rats at low temperatures produced reactions such as were obtained in animals which differed in species and with respect to activity of thyroido-hypophyseal interrelationship. Submitted by Acad L. A. Orbeli 27 Oct 49.

155T42

TEMKINA, V. Ya.

FD-1508

USSR/Chemistry - Catalysis

Card 1/1 : Pub. 129-11/18

Author : Kazanskiy, B. A. and Temkina, V. Ya.

Title : Hydrogenation of diphenylfulvene in the presence of nickel

Periodical : Vest. Mosk. un., Ser. fizikomat. i yest. nauk, 9, No 6, 91-93, Sep 54

Abstract : The kinetic curve for the hydrogenation of diphenylfulvene over a skeletal nickel catalyst differs from that over a palladium catalyst. According to data from incomplete hydrogenation, the reaction proceeds just as selectively as over the palladium catalyst. Quadri-substituted ethylene, such as cyclopentylidenediphenylmethane, hydrogenates over skeletal nickel. Eight references (Six USSR)

Institution : Chair of Organic Catalysis

Submitted : January 25, 1954

TEMKINA, V. YA.

[illegible]

[illegible] C_6H_5O [illegible] II [illegible]

[illegible] powders [illegible] H_2O [illegible]

[illegible] and HCl. II [illegible] powder [illegible]

sol. in EtOH, insol. in Me_2CO, $CHCl_3$, $C_2H_4Cl_2$, and C_6H_6. The suitability of I and II for analytical work was tested polarographically [illegible] at various pH and the re[illegible] I and II [illegible] study is [illegible]

M. Hoch

4

SOV/64-58-4-7/20

AUTHORS: Lastovskiy, R. P., Temkina, V. Ya.

TITLE: On the Stabilization of Aliphatic Iodine- and Bromine Derivatives of Hydrocarbons (O stabilizatsii alifaticheskikh iod- i bromproizvodnykh uglevodorodov)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 4, pp. 219 - 221 (USSR)

ABSTRACT: Ye. I. Mironova took part in the experimental works. The stabilization of methylene iodide, methyl iodide, butyl iodide, bromoform, tetrabromomethane and methylene bromide was investigated in the case of a longer storing in sealed ampoules of colorless glass. The iodine derivatives proved to be less stable than the bromine derivatives; this was found after about 30 substances had been used in the experiments in the light and in the dark. It was found that methylene iodide, methyl iodide and butyl iodide are stabilized with metallic copper and zinc, resorcinol, hydroquinone, and diphenylamine. On this occasion it was found that the effect of light is of different kind. Bromoform, methylene bromide, and tetrabromomethane can be stabilized with copper, the first mentioned also with trilon B

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On the Stabilization of Aliphatic Iodine- and Bromine SOV/64-58-4-7/20
Dèrivatives of Hydrocarbons

and by means of blowing through with nitrogen. The experimental results obtained are given in a table with the method of stabilization and the technique of preparation . There are 5 tables and 9 references, 2 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov (All-Union Scientific Research Institute for Chemical Reagents)

1. Iodine derivatives--Stabilization 2. Bromine derivatives --Stabilization 3. Hydrocarbons

Card 2/2

TEMKINA, V. Ya., Cand Chem Sci - (diss) "Synthesis and study of certain new complex ions," Moscow, 1960, 10 pp, (Institute of Geochemistry ~~imeni~~ and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences, USSR)

(KL, 39-60, 114)

TEMKINA, V.Ya.; LASTOVSKIY, R.P.; BRUDZ', V.G.

Hexamethylenediamine acetate. Metod.poluch.khim.reak.i prepar. no.4/5:32-33 '62. (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; SELIVERSTOVA, I.A.

Bisthiosalicylidene-ethylenediamine. Met. poluch. khim. reak. i prepar. no.6:44-46 '62. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; FADEYEVA, I.P.

Iminodiacetic acid. Met. poluch. khim. reak. i prepar. no.6:59-60 '62. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; SAMYLOVA, I.M.

o-Hydroxyphenyliminodiacetic acid Met. poluch. khim. reak. i prepar. no.6:67-68 '62.

p-Hydroxyphenyliminodiacetic acid. Ibid.:68-70

(MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; MIRONOVA, Ye.I.

3-Hydroxy-4-carboxyphenyliminodiacetic acid. Met. poluch. khim. reak. i prepar. no.6:70-71 '62. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; SELIVERSTOVA, I.A.; YEGORUSHKINA, N.A.

Disodium salt of magnesium ethylenediaminetetraacetate.
Met. poluch. khim. reak. i prepar. no.6:83-84 '62.

Disodium salt of zinc ethylenediaminetetraacetate.
Ibid.:84-85 (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P. (Moscow, Bogorodskiy val.d.3); DYATLOVA, N.M. (Moscow, Bogorodskiy val.d.3); KOLPAKOVA, I.D. (Moscow, Bogorodskiy val.d.3); TEMKINA, V.Ya. (Moscow, Bogorodskiy val.d.3); LAVROVA, O.Yu. (Moscow, Bogorodskiy val.d.3)

New complexones and possibilities of their application in analytical chemistry. Acta chimica Hung 32 no.2:229-233 '62.

1. Vsesoyuznyy nauchno-issledovatelskiy institut khimicheskikh reaktivov.

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; SELIVERSTOVA, I.A.

Using the automatic titrimeter for synthesis control. Prom. khim. reak. i osobo chist. veshch. no.1:45-47 '63. (MIRA 17:2)

LASTOVSKIY, R.P.; DYATLOVA, N.M.; TEMKINA, V.Ya.; YAROSHENKO, G.F.; KOLESNIK, Ye.S.

New polycomplexons. Trudy IREA no.25:57-65 '63. (MIRA 18:6)

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; SELIVERSTOVA, I.A.

Synthesis and study of lead ethylenediaminetetraacetate. Trudy IREA no.25:100-103 '63. (MIRA 18:6)

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; YAROSHENKO, G.F.

N-salicyloylphenylhydroxylamine. Metod.poluch.khim.reak. i prepar. no.7:17-19 '63. (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P.; TEMKINA, V.Ya.; FADEYEVA, I.P.

Dihydroxyethylaminoacetic acid. Metod.poluch.khim.reak. i prepar. no.7:19-21 '63. (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh khimicheskikh veshchestv.

LASTOVSKIY, R.P., doktor khimich.nauk; KOLPAKOVA, I.D., kand.khimich, nauk; DYATOLOVA, N.M., kand.khimich.nauk; TEMKINA, V.Ya., kand.khimich. nauk

Use of complexons in analytical chemistry. Zhur.VKHO 9 no. 2: 138-145 '64. (MIRA 17:9)

SKVORTSOVA, I.P., red.; TEYERMAN, T., tekhn.red.; TEMKINA, Ye.L.

[Mechanized soil packing in construction work; collection of reports] Mekhanizirovannoe uplotnenie gruntov v stroitel'stve; sbornik dokladov. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1958. 85 p. (MIRA 12:2)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organizatsii, mekhanizatsii i tekhnicheskoi pomoshchi stroitel'stvu. (Soil stabilization)

KARASEV, K.I., kand. khim.nauk; MAKOTINSKIY, M.P., kand. arkh.; TROSHICHEV, V.M.; Prinimali uchastiye: LUTSIK, L.D., inzh.; FEDOROVA, G.M., tekhnik; LIVSHITS, A.M., inzh.; ANDREYEV, V.S., retsenzent; MIRENSKIY, B.R., inzh., retsenzent; GURVICH, E.A., red.izd-va; TEMKINA, Ye.L., tekhn. red.

[Catalog of finishing materials and products] Katalog otdelochnykh materialov i izdelii. Moskva, Gosstroiizdat. Pt.2. [Paints and lacquers] Kraski i laki. 1961. 76 p. (MIRA 16:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov. 2. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Andreyev).
(Paint materials—Catalogs)

TEMINSKOVA-TOPALOVA, D.

Flora of Euglenophyta and Volvocineae in Bulgaria. Godishnik biol 56 no.1:57-66 '61-'62 [publ. '63].

TEMKO, K.B.

Curved capacity and Fourier series. Uch.zap.Mosk.un. no.186[a]: 83-108 '59. (MIRA 13:6)
(Fourier's series)

TEMKO, K.B.

Riesz's arithmetic mean value in the theory of trigonometric series. Uch.zap.Mosk.un. no.186[a]:109-130 '59. (MIRA 13:6)

(Fourier's series)

9.4310

AUTHORS: Igil'tsyn, M. I., Kontsevoy, Yu. A., Temko, K. V.

TITLE: Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol 5, Nr 3, pp 508-513 (USSR)

ABSTRACT: This work was submitted to the III All-Union Conference on Semiconductor Theory in L'vov, in April 1959. Reference is made to previous investigations by different scientists of transient processes in the n-p junction. Figure 1 illustrates the operating conditions. As shown in Fig. 1, the voltage remains constant during time T until the concentration of the excess carriers drops to zero, then goes through zero and approaches the voltage of the source. The duration T of the transient process can be related to the lifetime of the charge carriers in the base zone. This paper is

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Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

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an attempt to study the transient process, taking into consideration the variation of lifetime at differing injection levels. A particular case $I_{dir} = I_{rev} = I$ is analyzed. The solution of this problem shows how the duration T of the transient process depends on the injection level, i.e., the direct current, under the assumption of a constant ratio of direct to reverce current. The relation of the transient process duration and lifetime of minority carriers in the base zone will be investigated also. The duration of transient process, T, depends on injection level. 1. Formulation of the Problem. The calculation is made for a plane p-n function with thick base and high electron mobility under the following assumptions: a. The concentration of recombination centers is low, and lifetime under steady conditions changes with injection level according to Shockley-Read.

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Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

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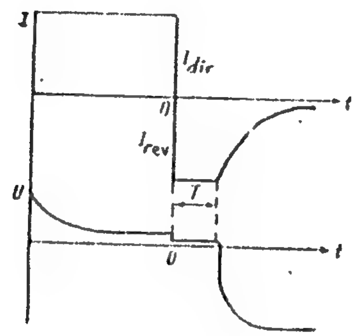

Fig. 1. The transient process in the n-p junction with regard to current and voltage.

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Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

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$$\tau = \tau_0 \frac{1 + \frac{\tau_\infty}{\tau_0}\frac{\delta p}{n_0}}{1 + \frac{\delta p}{n_0}}. \qquad (2)$$

Here, τ_0 and τ_∞ are the lifetimes of charge carriers at small and infinitely great injection levels, respectively; $\delta p/n_0 = \Delta$ is injection level, i.e., the ratio of excess charge carrier concentration to the equilibrium charge. b. The specific electric mobility of the p-zone is considerably higher than that of the n-zone. c. An injection level range with an injection coefficient $\gamma = j_p(0)/j(0)$ approximately equal to unity, is considered. d. When holes are injected into the base area electron neutrality is maintained; i.e., $\delta n \simeq \delta p$ and $dn/dt \simeq dp/dt$. e. The problem is solved in a one-dimensional approximation for an infinite conductor ($W \gg 3L$). In a general case the p-n junction can be described by a system of equations:

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$$\frac{\partial n}{dt} = -c_n n p_t + c_n n_1 n_t + \frac{1}{q} \operatorname{div} j_n, \quad (3)$$

$$\frac{\partial p}{\partial t} = -c_p p n_t + c_p p_1 p_t - \frac{1}{q} \operatorname{div} j_p, \quad (4)$$

$$j_n = qD_n \frac{\partial n}{\partial x} + q\mu_n n E, \quad (5)$$

$$j_p = -qD_p \frac{\partial p}{\partial x} + q\mu_p p E, \quad (6)$$

$$j = j_p + j_n. \quad (7)$$

Here n and p are nonequilibrium concentrations of electrons and holes, respectively; n_t and p_t are electron and hole concentrations at local centers; c_n, c_p designate probability of their being captured by the local centers; n_1, p_1 are concentrations in the corresponding energy zone when the Fermi-level coincides with the level of the local center; D_n, D_p represent coefficient of electron and hole diffusion, respectively;

j_n, j_p are electron and hole component of the density of full current j; μ_n, μ_p are electron and hole mobility; q is electron charge; E is electric field potential. Equations (3) to (7) clearly show the kinetics of recombination and thermal generation of charge carriers. This system of equations reduces to one equation in dimensionless variables:

$$\frac{\partial y}{\partial \theta} = \frac{1 + 2\Delta y}{1 + 1{,}5\Delta y}\frac{\partial^2 y}{\partial X^2} - \frac{jL_D}{2qn_0 D_p (1 + 1{,}5\Delta y)^2}\frac{\partial y}{\partial X} + \frac{\Delta}{2(1 + 1{,}5\Delta y)^2}\left(\frac{\partial y}{\partial X}\right)^2 - \frac{y(1 + \Delta y)}{1 + \frac{\tau_{p0}}{\tau_0}\frac{p_0}{n_0} + \frac{\tau_{n0}\Delta y}{\tau_0}} \qquad (13)$$

where the following designations are used:

$$y = \frac{p(x)}{p(0)} - \frac{p_0}{\Delta n_0}, \quad \Delta = \frac{p(0)}{n_0}, \quad \theta = \frac{t}{\tau_0}, \quad X = \frac{x}{L_D},$$

Here p(0) is the nonequilibrium hole concentration at the boundary of the p-n junction (x = 0) at steady state; $L_D = \sqrt{D_p \tau_0}$, diffusion length at low injection levels. The limiting conditions of this problem are written as:

$$\left.\frac{dy}{dX}\right|_{X=0} = -\frac{jL_0}{qD_p\Delta n_0}\,\frac{1+\Delta y}{1+2\Delta y},$$
$$y|_{X=\infty} = 0. \tag{14}$$

The relation between direct current density and injection level can be written as:

$$\frac{2(\Delta+1)\Delta}{(1+\Delta)\,\alpha(\Delta)}\sqrt{\frac{1+\Delta}{1+\frac{\tau}{\tau_0}2\left(\Delta-\frac{p_n}{n_0}\right)}} = \frac{jL}{qn_0D_p}, \tag{15}$$

$$\alpha(\Delta) = \frac{1.42}{3\Delta+2}\sqrt{\frac{6\Delta^3+16\Delta^2+11\Delta+2}{1+\Delta}}.$$

The solution of the corresponding stationary equation is the initial condition of the problem. 2. Calculation of Distribution of Excess Carrier Concentration During Transient Process. Calculation was accomplished by a numerical method with a computer. At first, the stationary problem $J = J_{dir}$ was solved. Two values for τ_{∞} / τ_{o} (0.1 and 10) were prescribed as well as different Δ values. The results are shown graphically in Fig. 2. Along the abscissa the distance from p-n junction $X = \frac{x}{LD}$ is plotted, while along the ordinate axis the concentration of excess charge carriers y is shown, both in dimensionless units. The curves of Fig. 2a are drawn at time intervals $\theta = t/\tau_{o} = 0.04$, while those of Fig. 2b are at $\theta = 0.08$. The duration of transient process T is determined by a decrease to zero of excess concentration at the p-n junction boundary with the base area; i.e., when $X = 0$. This dependence for τ_{∞} / τ_{o} = 0.1 and 10 respectively, and various Δ values are

Calculation of Transient Process in an n-p Junction at Arbitrary Injection L...

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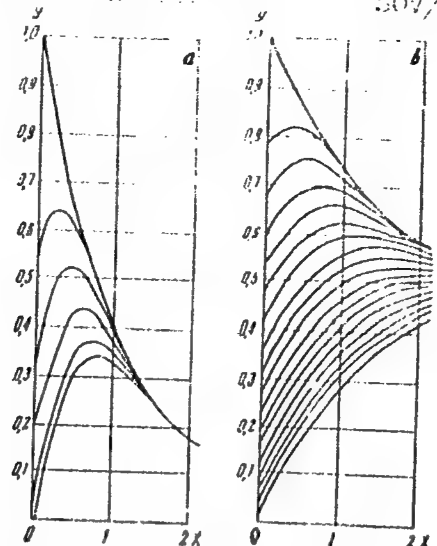

Fig. 2. Changes in the distribution of excess concentration in the base area of electron-hole junction, during transient process: (a) $\tau_{\infty}/\tau_0 = 0.1$; $\Delta = 0.5$; (b) $\tau_{\infty}/\tau_0 = 10$; $\Delta = 1$.

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shown in Fig. 3. The influence of τ_{∞}/τ_0 ratio on the duration of the transient process is very considerable, as shown in Fig. 4. An analysis of the above numerical calculations results in an approximate expression:

$$T(\Delta) = K\tau(\Delta). \quad (16)$$

permitting an experimental determination of lifetime vs injection level according to transient characteristics of p-n junction with a thick base. A. I. Sidorov helped. There are 4 figures; 7 references, 3 Soviet, 4 U.S. The U.S. references are: C. A. Bittmann, G. Bemski, J. Appl. Phys., 28, 12, 1423 (1957); S. Lax, S. Neustadter, J. Appl. Phys., 25, 9, 1148 (1954); M. Byczkowski, J. R. Madigan, J. Appl. Phys., 28, 1, 8 (1957); R. H. Rediker, D. E. Sawyer, Proc. IRE, 45, 7, 944 (1957).

SUBMITTED: June 29, 1959

Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

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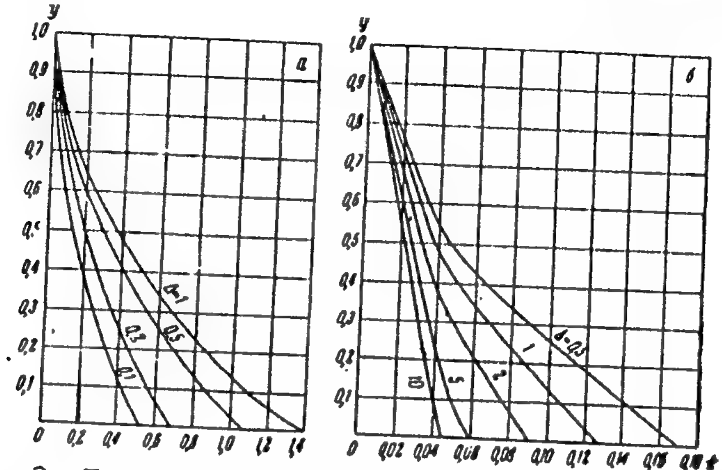

Fig. 3. Excess concentration at p-n junction boundary (X = 0) vs time during transient process (Δ is injection level at p-n junction boundary during transit time of direct current); (a) $\tau_\infty / \tau_0 = 10$; (b) $\tau_\infty / \tau_0 = 0.1$.

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Calculation of Transient Processes in an n-p Junction at Arbitrary Injection Levels

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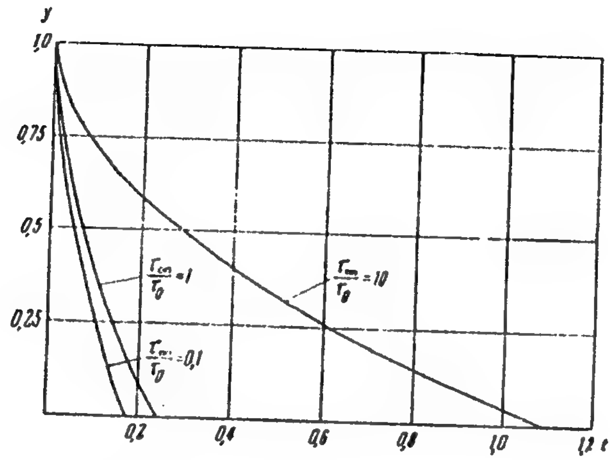

Fig. 4. Dependence of excess concentration at p-n junction boundary (X = 0) on time at Δ = 0.5 and various τ_∞ / τ_o.

Card 12/12

TEMKO, K. V.

TEMKO. K. V.: "On the agreement between Fourier series and functions with an integrable square". Moscow, 1955. Min Education. Moscow Oblast Pedagogical Inst. (Dissertations for the degree of Candidate of Physicomathematical Sciences.)

SO: Knizhnaya Letopis' No. 50. 10 December 1955. Moscow.

TEMKO, K.V.

Convex capacity of sets and the Fourier's series. Dokl. AN SSSR 110 no.6:943-944 O '56. (MLRA 10:2)

1. Moskovskiy oblastnoy pedagogicheskiy institut. Predstavleno akademikom P.S. Aleksandrovym.
(Aggregates) (Fourier's series)

TEMKO, K.V.

SUBJECT USSR/MATHEMATICS/Fourier series CARD 1/2 PG - 650
AUTHOR TEMKO K.V.
TITLE The convex capacity and Fourier series.
PERIODICAL Doklady Akad.Nauk 110, 943-944 (1956)
reviewed 3/1957

Let $L = \{B\}$ be the system of all Borel sets of the interval $[0,2\pi]$. The author considers the measures μ being defined on L, i.e. completely additive, non-negative and normalized functions of the set. Normalized means that $\mu([0,2\pi]) = 1$. Let the Borel set B have a positive convex capacity which is generated by the sequence $\{\lambda_n\}$ if there exists a measure $\mu \prec B$ such that the integral

$$\int_B Q(r,x-y,\lambda)\,d\mu(y)$$

for $r \to 1-0$ is uniformly bounded in x. The notation $\mu \prec B$ denotes that $\mu(B)=1$. Here

$$Q(r,x,\lambda) = \frac{\lambda_0}{2} + \sum_{n=1}^{\infty} r^n \lambda_n \cos nx$$

and $\{\lambda_n\}$ is a convex sequence of positive numbers, where $\lambda_n \downarrow 0$ and $\sum \lambda_n = \infty$. The following theorems are formulated:

Doklady Akad.Nauk 110, 943-944 (1956) CARD 2/2 PG - 6

1. In order that the convex capacity of the Borel set B is positive it is necessary and sufficient that there exists a measure $\mu \prec B$ such that the series $\sum(\alpha_n \cos nx + \beta_n \sin nx)\lambda_n$ is the Fourier series of a bounded function. Here α_n and β_n are the Fourier-Stiltje's coefficients of the measure μ.
2. If the Borel set B_o possesses a positive Lebesgue measure, then it possesses a positive convex capacity too, which is generated by an arbitrary sequence $\{\lambda_n\}$ of the described kind.
3. If $\{\lambda_n\}$ is of the described kind and if $n\Delta\lambda_n$ is not increasing, then from the convergence of the series

$$\sum(a_n^2 + b_n^2)\frac{1}{\Delta\lambda_n}$$

there follows that the trigonometric series $\sum(a_n \cos nx + b_n \sin nx)$ and its conjugate series can diverge at most on a set with vanishing convex capacity (which is generated by $\{\lambda_n\}$).

INSTITUTION: The Educational Institute of the Domain Moscow.

Tɪmko, K. V.

AUTHOR: ADIROVICH, E.I., TEMKO, K.V. 57-6-4/36

TITLE: Transition, Frequency and Phase Characteristics of a Transistor in the Case of a Common Emitter. (Perekhodnaya, chastotnaya i fazovaya kharakteristiki tranzistora pri obshchem emittere, Russian)

PERIODICAL: Zhurnal Tekhn.Fiz. 1957, Vol 27, Nr 6, pp 1174-1181 (U.S.S.R.)

ABSTRACT: The formula given by the authors in Zhurnal Tekhn.Fiz, 1957, Vol 27, Nr 3, pp 473-473 for the transition characteristic of a transistor in the case of a common emittor can not be used for immediate calculation of processes in transistors because of its complex character. Here a formula is deduced which offers an approximation for the transition characteristic of a transistor in the case of a common emittor in its total course which can serve as a basis for a calculation of transition processes and frequency characteristics.

Also the corresponding formulae for the frequency-phase-characteristic of a transistor are deduced and then the approximation formulae for the frequency as well as for the phase characteristic are given.

A comparison is drawn with the detailed formulae and the authors

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Transition, Frequency and Phase Characteristics of a Transistor in the Case of a Common Emittor. 57-6-4/36

show that the approximated formulae are very exact.
In the end the relation between the critical frequency and the transistor parameters is mentioned. (With 5 Illustrations and 3 Slavic References).

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 30.12.1956
AVAILABLE: Library of Congress

Card 2/2

AUTHOR: TEMKO, K.V. (Moscow) 39-3-8/8

TITLE: On Absolute Convergence of Trigonometric Series (Ob absolyutnoy skhodimosti trigonometricheskikh ryadov)

PERIODICAL: Matematicheskiy Sbornik, 1957, Vol. 43, Nr 3, pp. 401-408 (USSR)

ABSTRACT: Let the convex sequence of positive numbers $\{\lambda_n\}$ satisfy the conditions $\lambda_n \downarrow 0$ and $\sum \lambda_n = \infty$.
Let

$$Q(x,r) = \frac{\lambda_0}{2} + \sum r^n \lambda_n \cos n x .$$

The author says that the set B possesses a positive convex capacity which is generated by $\{\lambda_n\}$, if there exists a measure μ concentrated on B so that $\int_B Q(x-y,r)d\mu(y)$ is bounded uniformly in x for $r \to 1 - 0$.
At first the author presents two theorems on the convex capacity. The first theorem is an analogue of the Zygmund-Salem theorem [Ref. 2] concerning the logarithmic capacity and the second theorem is a generalization of Frostman's theorem [Ref. 3].

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On Absolute Convergence of Trigonometric Series 39-3-8/8

Then it is stated:

Theorem : If the set B possesses a positive convex capacity generated by $\{\lambda_n\}$, then there exists a measure μ concentrated on B so that $\sum (\alpha_n^2 + \beta_n^2)\lambda_n < +\infty$, where α_n, β_n are the Fourier-Stieltjes coefficients of the measure μ.

Theorem: Let

$$\rho_n = O\left(\frac{\lambda_n}{\lambda_1+\lambda_2+\ldots+\lambda_n}\right), \quad \sum \rho_n = \infty$$

Then the relation

$$\lim_{n\to\infty} \frac{\sum_{k=1}^{n} \rho_k \left|\cos(n\, x+x\, n)\right|}{\sum_{k=1}^{n} \rho_k} = \frac{2}{\pi}$$

holds everywhere, at most except a set of vanishing convex capacity generated by $\{\lambda_n\}$. 1 Soviet and 4 foreign references are quoted.

SUBMITTED: 12 July 1956

AVAILABLE: Library of Congress

Card 2/2 1. Trigonometry

USCOMM-DC-54780

Temko, K.V.

AUTHORS: Adirovich, E. I., Ryabinkin, Yu. S., Temko, K. V. 57-1-9/30

TITLE: The Equilibrium Distribution of Field Potential and of the Concentration of the Charge Carriers on Fused-In Junctions (Ravnovesnoye raspredeleniye potentsiala, polya i kontsentratsiy nositeley zaryada na vplavlennykh perekhodakh).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 1, pp. 55-66 (USSR)

ABSTRACT: First the authors show that the problem of the thermodynamic equilibrium distribution of the potential, of the field and of the concentration of mavable charge carriers in a general case can not be solved according to the method of W. Shockley (ref.1) i.e. by means of neglecting the concentration of electrons and holes within the range of transition in comparison to the concentration of the dominating admixtures. Then the mathematic formulation and the general solution of the problem are given. The problem of the distribution of the potential, of the field and of the concentration of charge carriers in a semiconductor with one p-n or p-i- transition at thermodynamic equilibrium leads to the finding of a solution for the equation of Shockley

$\frac{d^2\Psi}{dx^2} = 2\,\mathrm{sh}\Psi - N(x)$ for the potential (1) under corresponding

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The Equilibrium Distribution of Field Potential and of the Concentration of the Charge Carriers on Fused-In Junctions. 57-1-9/30

boundary conditions. For the case where the outer contacts are sufficiently far away from the p-n transition the solution of the equation (1) must be found on the whole infinite straight ($-\infty < x < \infty$). By means of a double integration the solution of the problem is given in form of a inversion function (equations (16) and (17) and such the solution of the problem is led back for the completely general case to a quadrature. This result is also valid if the concentration of the recombination centers (traps) in the semiconductor are great and the volume charge connected with these centers is contained in the Poisson equation. The equation (18) is put down for this case. In the next chapter the p-i transition is investigated and the authors show that the potential distribution in the semiconductor of the i-type can be expressed in elementary functions. In a p-semiconductor an immediate integration can not be carried out and the authors show that within this range the potential $\Psi(x)$ can be approximated with a sufficient degree of exactness by an exponential magnitude independent from the alloy-degree of the semiconductor. In the third chapter the p-n transition is investigated. The general solution for a p-n transition is expressed by the obtained equations(16) and (17). The authors show that an exponential approximation in the semiconductor of the p-type remains in all cases

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where the degree of alloy of the p-range exceeds that of the n-range by more than one order of magnitude, i.e. practically in almost all real cases. For real conditions the semiconductor of the n-type is divided into three ranges and approximation formulae are given for them. Diagrams are enclosed for the determination of the position of p-n transitions in dependence on the concentration of admixtures in semiconductors of the n- and p-type. The more exact solution of the equation (1) and the calculation of the position of p-n transitions was carried out by means of an electronic computing machine of the "Strela-3" type. There are 9 figures, 4 tables, and 4 references, 2 of which are Slavic.

SUBMITTED: June 12, 1957

AVAILABLE: Library of Congress

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16.4200

AUTHOR: Temko, K.V.

TITLE: The arithmetic means of Riesz in the theory of trigonometric series

PERIODICAL: Referativnyy zhurnal. Matematika, no. 7, 1961, 8, abstract 7 B 33. ("Uch. zap. MGU", 1959, vyp 186, 109-130)

TEXT: The author considers the trigonometric series

$$\sum_{n=1}^{\infty} (a_n \cos nx + b_n \sin nx) \quad , \qquad (1)$$

where $a_n = O(n^{\lambda})$, $b_n = O(n^{\lambda})$. $f_r(x)$ denotes the sum of the series which appears after an r times term by term integration of (1). Let $r > \alpha + 1 \geqslant \lambda + 1$. It is proved : If the series (1) in one point is (R, α)-summable with respect to S then in this point there exists the generalized derivative (in the sense of de Vallee - Poussin) of r-th order of $f_r(x)$ and it is equal to S . A corresponding result holds also

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The arithmetic means of Riesz ...

for the series conjugate with (1). Analogous theorems for Cesaro means of integral orders were proved by A.I. Plesner.

[Abstracter's note : Complete translation.]

Card 2/2

16(1) SOV/39-49-1-5/5

AUTHOR: Temko, K.V. (Moscow)

TITLE: On the Equilibrium Potential, Convex Capacity, and Uniqueness of Trigonometric Series

PERIODICAL: Matematicheskiy sbornik, 1959, Vol 49, Nr 1, pp 109-132 (USSR)

ABSTRACT: § 1. Let E be a set of finitely many intervals without common points; let Γ be the boundary of the unit circle, $\phi(r) = \int_1^{1/r} t|\lambda'(t)|dt$, where $\lambda(t) \in A$, i.e. $\lambda(t) > 0$ convex, two times differentiable and $\lambda(t) \downarrow 0$ for $t \to \infty$; $t|\lambda'(t)|$ not increasing for an increasing t and $\int_0^\infty \lambda(t)dt = \infty$. The function

$$v(P) = \int_\Gamma \phi(r_{PQ})d\mu(Q) \tag{9}$$

is called a v-potential.

Theorem 1: Under the above assumptions there exists a measure μ, $\mu(E) = 1$, so that the v-potential generated by this measure is constant on E.

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On the Equilibrium Potential, Convex Capacity, and Uniqueness of Trigonometric Series

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§ 2. It is proved that, according to K.V.Temko [Ref 2], the definition of the capacity of a set is equivalent to the definition of Frostman [Ref 1] if this latter definition is interpreted correspondingly.

§ 3. Let the series

$$(29) \qquad \frac{a_0}{2} + \sum_{n=1}^{\infty} (a_n \cos nx + b_n \sin nx)$$

belong to the class T_λ, $\lambda_n \in A$, i.e. let $\sum_{n=0}^{\infty} (a_n^2 + b_n^2) \cdot \lambda_n$ be convergent. Let $B \in U(T_\lambda)$ if a series (29) which belongs to T_λ and whose Poisson-Abel-sum is 0 outside of B, vanishes identically.

Theorem 8: In order that a closed set B belongs to $U(T_\lambda)$ it is sufficient that the convex capacity of B generated by $\lambda(t) \in G$ equals zero; if $\lambda(t)$ belongs to D, then it is necessary too. $\lambda(t) \in D$ means: 1. $\lambda(t) \in A$; 2. $t\lambda(t) \uparrow \infty$ for $t \to \infty$; 3. $t^2 |\lambda'(t)|$

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On the Equilibrium Potential, Convex Capacity, and Uniqueness of Trigonometric Series SOV/39-49-1-5/5

does not decrease for $t \to \infty$; 4. $3|\lambda(t)| - t\lambda''(t) \geqslant 0$ and decreases for $t \to \infty$. $\lambda(t) \in G$ means: $\lambda(t) > 0$, convex, $\lambda(t) \downarrow 0$ for $t \to \infty$, $\int_0^\infty \lambda(t)dt = \infty$, $\Delta^2 \lambda(0) > 0$, where

$$\Delta^2 \lambda(t) = \Delta\lambda(t) - \Delta\lambda(t+1); \quad \Delta\lambda(t) = \lambda(t) - \lambda(t+1).$$

The author thanks N.K.Bari.

There are 7 references, 3 of which are Soviet, 2 Swedish, 1 American, and 1 Polish.

SUBMITTED: December 17, 1957

Card 3/3

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16.2800

AUTHOR: Temko, K.V. (Moscow)

TITLE: On the convex capacity

PERIODICAL: Matematicheskiy sbornik, v. 51, no. 2, 1960, 217-226

TEXT: Let $\mathcal{B} = \{B\}$ be the system of all Borel sets of the interval $[0, 2\pi]$. Let μ be a continuous measure defined on $\mathcal{B}$; $\mu([0, 2\pi]) = 1$. If $\mu(B) = 1$, then μ is called concentrated on B, in signs $\mu \prec B$. Let

$$Q(x) = \sum_{n=0}^{\infty} \lambda_n \cos nx, \qquad (1)$$

where $\lambda_n = \lambda(n)$, $\lambda(t)$ -- positive function for which $\lambda(t) \downarrow 0$ for $t \to \infty$, $\sum \lambda_n = \infty$, $\Delta^2 \lambda_n \geqslant 0$ and $\Delta^2 \lambda_0 > 0$, where $\Delta^2 \lambda_n = \Delta\lambda_n - \Delta\lambda_{n+1}$, $\Delta\lambda_n = \lambda_n - \lambda_{n+1}$. The function u(x):

$$u(x) = \int_0^{2\pi} Q(x-y)\, d\mu(y) \qquad (2)$$

is called the u-potential generated by μ.

Definition 1: The number $\mathcal{E}_M[B, \lambda(t)] = e^{-V}$, where $V = \inf_{\mu \prec B} \sup_{0 \leqslant x \leqslant 2\pi} u(x)$,

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On the convex capacity

is denoted as the convex capacity of the set $B \in \mathcal{B}$ generated by a function $\lambda(t)$ of the class mentioned.

Definition 2: $\lambda(t) \in \Gamma(\lambda)$, if, besides the given conditions, it satisfies the conditions $t|\lambda'(t)|$ does not increase for $t \to \infty$. Let

$$\phi(x) = \int_0^{1/x} t|\lambda'(t)|\,dt \qquad (3)$$

and

$$v(x) = \int_0^{2\pi} \phi(x-y)\,d\mu(y). \qquad (4)$$

$v(x)$ is called the v-potential generated by μ. Let $\lambda(t) \in \Gamma(\lambda)$ be everywhere.

Theorem 1: The u-potential generated by an arbitrary measure μ is finite everywhere, eventually except a set of points with vanishing convex capacity.

Theorem 2: Let $v(x)$ be the v-potential generated by μ. Then to every point x there exists a point x^* belonging to the kernel of the measure μ so that

$$v(x) \leqslant 2v(x^*). \qquad (8)$$

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Theorem 3: Let $B \in \mathfrak{B}$ be a set with vanishing convex capacity; let μ be an arbitrary measure concentrated on B. There exists at least one point $x \in B$ in which the u-potential generated by μ is $+\infty$.

Let $\mu(x,r) = \mu([x-r, x+r])$.

Theorem 4: If

$$I(x) = \int_0^{\varrho} \mu(x,t)\Phi'(t)dt \tag{9}$$

is finite in the point x (ϱ is determined from the equation $\mu(x,\varrho)=1$), then the u-potential generated by μ is also finite in x; $\Phi(t)$ is defined by (3).

Let h(t) be that function, with the aid of which the Hausdorff h-measure is defined. If $h(t) = \frac{1}{\Phi(t)}$, where $\Phi(t)$ is given by (3), then the Hausdorff h-measure is said to have the dimension $\lambda(t)$.

Theorem 5: The convex capacity of the closed set B generated by $\lambda(t) \in \Gamma(\lambda)$ will be positive, if the Hausdorff h-measure of this set, relative to the function h(t) for which

$$\int_0^a h(t)\Phi'(t)dt, \quad 0 < a < \infty \tag{10}$$

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On the convex capacity

converges, is positive.
Theorem 6: If $B \in \mathfrak{X}$ has a positive convex capacity generated by $\lambda(t)$, then B has also a positive Hausdorff h-measure with dimension $\lambda(t)$.
Theorem 7 gives another formulation of theorem 4.
Theorem 8: Let μ be an arbitrary measure and $F(x)$ the point function generated by this measure. The integral $\int_0^{\pi}\left[F(x+t)-F(x-t)\right]\Phi'(t)dt$ can then become ∞ at most on a set with vanishing convex capacity.
Theorems 9, 10, 11 give necessary and sufficient conditions that the convex capacity of a perfect set be positive.
Let $\varphi(t)$ be the function corresponding to a set P of the Cantor type according to Nevanlinna (Ref.5: Odnoznachnyye analiticheskiye funktsii [Unique analytic functions], Moscow-Leningrad, Gostekhizdat, 1941).
Theorem 12: A set P of the Cantor type has a positive convex capacity which is generated by $\lambda(t) \in \Gamma(\lambda)$ if and only if the integral

$$\int_0^{2\pi} \varphi(t)\Phi'(t)dt \qquad (18)$$

converges, where $\varphi(t)$ is the function corresponding to this set P.
Card 4/5

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C111/C333

On the convex capacity

The author thanks N.K.Bari. There are 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc. The two references to English-language publications read as follows: R.Salem, On the theorem of Zygmund, Duke Math.Journ., 10, No.1 (1943), 23-31; R.Salem, A.Zygmund, Capacity of sets and Fourier series, Trans.Amer.Math.Soc., 59, No.1 (1946), 23-41.

SUBMITTED: September 23, 1958

Card 5/5

TEMKO, K.V.; TEMKO, S.V.

The equilibrium potential. Dokl. AN SSSR 166 no.3:551-554 Ja '66. (MIRA 19:1)

1. Submitted May 4, 1965.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755220011-7"

PA - 2024

AUTHOR: TEMKO, S.V.

TITLE: On the Derivation of the FOKKER-PLANCK Equation for a Plasma.

PERIODICAL: Zhurnal Eksperimental'noi i Teoret.Fiziki, 1956, Vol 31, Nr 6, pp 1021-1026 (U.S.S.R.)
Received: 1 / 1957 Reviewed: 3 / 1957

ABSTRACT: The method developed by BOGOLJUBOV (Problemy dinamiceskoj teorii v stati sticeskoj fisiko (= The problems of the dynamical theory in statistical physics, 1946) permits the determination of the FOKKER-PLANCK equation on the basis of the mechanics of molecular totalities and the explicit computation of their coefficients for a prescribed law of interaction. In the case of a plasma the divergence of the FOKKER-PLANCK coefficients is liquidated in large intervals by cutting off in the DEBYE radius. This cutting-off method is on this occasion not applied from without, but it results automatically from BOGOLJUBOV'S method. The present equation gives the derivation of the FOKKER-PLANCK equation for a many-type plasma with homogeneous spatial distribution. Furthermore, the asymptotic behaviors of the particles of the plasma in the case of low and high energies of motion are studied.

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On the Derivation of the FOKKER-PLANCK Equation for a Plasma. PA - 2024

The plasma is studied in the state of statistical equilibrium and the behavior of any single particle belonging to the plasma (or of a foreign charged particle which flew into the plasma) is investigated. When deriving the equation for the distribution function of such a particle it is assumed here that its interaction with the plasma does not destroy the statistical equilibrium of the plasma. The following system is investigated: The plasma enclosed in the volume V consists of N charged particles which may belong to $M \gg 2$ different kinds. The HAMILTON equation of such a system is here explicitly given, and so are the distribution functions of the particle system. Finally also the equation for the distribution function of any plasma particle is given. By inserting the solution of the equation for the correlation functions g_{ab} into the aforementioned equation for the distribution function it is possible to obtain the equation for the motion of the charged particles in the plasma. For the special case of the spatially homogeneous distribution of the plasma the distribution is here explicitly given. Two terms describe the effect of DEBYE'S screening by which the correlation functions are out off in large

Card 2/3

intervals. In the case of a statistical equilibrium of the plasma the distribution functions for every particle of the plasma (with the exception of the cut off particle, the motion of which is assumed to be not steady) can be set up in form of a MAXWELL distribution. In conclusion the coefficients for the FOKKER-PLANCK equation for a plasma are investigated. In the case of a steady motion of a cut-off plasma particle a MAXWELL distribution is obtained in all cases investigated here.

ASSOCIATION: Not given.
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

TEMKO, S.V.

56-7-19/66

AUTHOR KLIMONTOVICH, Yu.L., TEMKO, S.V.

TITLE A Quantum Kinetic Equation for a Plasma in Consideration of Correlation.
(Kvantovoye kineticheskoye uravneniye dlya plazmy s uchetom korrelyatsii.- Russian)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 33, Nr 7, pp 132-134 (USSR).

ABSTRACT According to BOGOLYUBOV N.N. the solution of the equations for the density matrix (and correspondingly also for the quantum-like distribution function) can be reduced to the solution of the equationsfor the quantum-like function F_s with classical boundary conditions.
Here $f_s = \gamma_s F_s$ is true, where γ_s denotes the operator of the symmetrization for n particles. For systems with central interaction the equations for F_1 and F_2 are here explicitly written down. By confining oneself to pairwise correlations,

$$F_2(q_1,q_2,p_1,p_2;t) = F_1(q,p_1;t)F_1(q_2,p_2;t)+g(q_1,q_2,p_1,p_2;t)$$

can be set up and an analogous expression is obtained for F_3. In the case of weak interaction the function g is small

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